SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Norm Covell
AIR POLLUTION CONTROL OFFICER

February 6, 2002

Whit Manly
Remy, Thomas and Moose, LLP
455 Capitol Mall, Suite 210
Sacramento, CA 95814

Subject: STATUS OF EMISSION REDUCTION CREDIT PROCESSING – FPL ENERGY

Dear Mr. Manly:

This letter is regarding the emission reduction credits in support of FPL Energy's Rio Linda/Elverta power plant and the outstanding information needed to continue processing the permit application. This is also a summary of our meeting on January 24, 2002. The following is a summary of the information that is still outstanding:

1. The application for emission reduction credits from the cessation of agricultural burning for El Rio Farms (00748) was determined to be complete on November 14, 2001. Included in the completion letter was a request for clarification regarding compliance with Health and Safety Code Section 41685. To date a response has not been received on the clarification. The District sent a letter on January 30, 2002 requesting a list of parcel numbers by farmer's field number in order for the District to transfer the information necessary to place these fields on a no burn list with the Agricultural Commissioner.

2. The application for emission reduction credits from the cessation of agricultural burning for SJV Enterprises (00749) was determined to be complete on November 21, 2001. Included in the completion letter was a request for clarification regarding compliance with Health and Safety Code Section 41685. To date a response has not been received on the clarification. The District sent a letter on January 30, 2002 requesting clarification regarding property ownership, the rights to apply for the ERC, the status of the current lease of the land, and requesting a list of parcel numbers by farmer's field number in order for the District to transfer the information necessary to place these fields on a no burn list with the Agricultural Commissioner. It is the District's' understanding that the property that was applied for was leased by SJV for rice farming. SJV no longer leases this land and a different lessee is farming it currently. Before emission reduction credits can be issued the landowner has to agree to assign his rights to SJV and the current lessee must agree to no burning.

3. The application for emission reduction credits from the cessation of agricultural burning for Perry Farms (00747) has not been determined complete. The last correspondence from the District, dated November 14, 2001, gave you until January 14, 2002 to submit all the requested information or the application would be cancelled. Based on discussions with the Agricultural Commission, even if the information was submitted, emission reduction credits for the cessation of burning the popular trees would not be able to be determined to be a real reduction. When the ag burning permit was issued to Perry Farms for the burning of the popular trees, it was based on being an orchard removal. The orchard removal was a one-time event and as such is not a basis for emission reduction credits. On January 30, 2002, a notice was sent to John Perry that not all of

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the requested information has been received and it requested that he withdraw this application.

4. The District has not received an evaluation and preliminary decision, or an evaluation and final decision for emission reduction credits for Scheidel, SJV Enterprises, and Akin in Sutter County.

5. As was discussed in our meeting on January 24, 2002, there have been some recent submittals of final ERC certificates where the amount of the credit issued in the final certificate was not consistent with the draft evaluation. This difference was with certificate 2001-24 where the value was slightly different in quarter 3. In addition, there appears to be two different certificates for the same parcel numbers, these are certificates 2001-38 and 20002. There are different amounts of ERCs on each certificate. You indicated in the meeting that you would work with Feather River to explain the differences.

   Based on a recent conversation with Feather River, there are two different certificates for these parcel numbers, one certificate that has been adjusted for the rice phasedown, one certificate that is then issued for the amount that was adjusted. The District needs clarification on which certificate or certificates are being surrendered for this project. In addition, documentation needs to be submitted to justify the validity of using this credit in the non-attainment area. For the other ag burn credits to be surrendered, the total certificate is surrendered and an adjustment is applied to the total. In this case, depending on what is surrendered, the total amount of credit associated with the acreage may not be surrendered and what is the appropriate adjustment for this.

6. As has been discussed in previous phone conversations, the interpollutant trade analysis that was submitted by URS does not include all of the analysis that was requested in the District's October 4, 2001 letter to you (see Attachment A, #6 of the attached October 4, 2001 letter, and #7 of the attached October 14, 2001 letter). As was requested in the previous letters, the District is requiring FPL to perform each of the analyses that was included in the list of analyses or justify why the analysis can not be performed. In addition, in Attachment B to this letter, there are preliminary comments on the analysis that was performed by URS. To give further guidance on the UAM modeling analysis, we have included the following:

   The Urban Airshed Model (UAM) is a three-dimensional photochemical grid model that calculates concentrations of pollutants by simulating the physical and chemical processes in the atmosphere. The modeling should be conducted on a domain for the Sacramento area that has been used by the California Air Resources Board (CARB) in its SIP planning process. The July 11-13,1990 ozone episode should be used to model the 2005 emission levels. The emissions files should represent 2005 emission levels with planned controls (attainment scenario). Sensitivity simulations should be conducted to assess the effects of changes in NOx and VOC on ozone levels in the Sacramento area.

   All sensitivity simulations should involve changes in emissions levels used in the 2005 attainment simulation. The first sensitivity simulation should be used to determine the change in ozone levels associated with a NOx point source at a location and with stack characteristics expected for the FPL project. A simulation should be run for the Sacramento domain with the above sources added. Then a determination should be made whether an additional simulation with a greater increase in the NOx emissions should be modeled to produce an easily discernible change in the simulated ozone levels. A second sensitivity simulation should be conducted to determine the change in ozone levels associated with a decrease in VOC levels from an area source category similar to the types of sources that will be used to provide the VOC offsets. Additional

simulations may be required to get appropriate model results on which to base a comparison of NOx and VOC effects. If necessary, conduct additional simulations to verify that the magnitude of emissions changes are producing a discernible (from a modeling standpoint) effect on the ozone levels in the Sacramento area.

For the final NOx and VOC simulations, calculate preliminary comparisons based on change in peak ozone (both 1-hour average and 8 hour average) and the maximum change in ozone. Prepare a brief written report that summarizes the assumptions and methodology used, as well as the results of the analysis. The results should be presented as the amount of ozone that is changed in the surface layer of the model per ton per day of VOC or NOx emissions change. Include in the analyses the calculation of the tons of emissions change that produces a 1 ppb change in ozone. The modeling input and output files will be made available to the District.

The total number of SIP 2005 attainment modeling runs should at least include the following 5 scenarios:

a. The modeling simulation for the NOx increases should be run with the plant at two locations - the actual proposed location, and a second location roughly in the downtown area of Sacramento. Modeling results should include contour maps of ambient VOC/NOx ratios.
b. There will be a simulation of a VOC decrease corresponding to the VOC offsets proposed to be provided for the project.
c. The model should be run with an across-the-board 20% increase in anthropogenic NOx emissions, and a separate run with an across-the-board 20% decrease in anthropogenic VOC emissions.

Before beginning the modeling simulations, a written protocol for the work needs to be submitted and approved by the District. The District will also be forwarding the protocol to both CARB and EPA for their input.

7. For the permitting of the power project, because of changes to the plant design, a revised modeling analysis of the plant emissions was suppose to be performed and submitted beginning of the fourth quarter of 2001. As to date, this revised modeling analysis has not been submitted.

As we discussed in our meeting on January 24, 2002, the District will not be completing any additional work on the power project until all of the requested information is submitted. As you were notified in a letter from the District on October 5, 2001 (see Attachment A), your extension for the issuance of the PDOC was granted pending the submittal of the requested information. Once the information that has been requested has been submitted to the District, then the District will determine an appropriate term for the extension. If you have any questions, please feel free to contact me at (916) 874-4833.

Sincerely,

Aleta S. Kennard

Aleta Kennard
Technical Services Supervisor

Cc: Brian Krebs
Mike Tollstrup, CARB
Gerardo Rios, EPA

ATTACHMENT A

October 5, October 14 and October 23, 2001
Comment Letters from the District

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Norm Covell
AIR POLLUTION CONTROL OFFICER

October 4, 2001

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Remy, Thomas and Moose, LLP
455 Capitol Mall
Suite 210
Sacramento, CA 95814
Attn: Whitman F. Manley

Subject: STATUS OF EMISSION REDUCTION CREDIT PROCESSING – FPL ENERGY

Dear Mr. Manley:

This letter is regarding the emission reduction credits in support of FPL Energy's Rio Linda/Elverta power plant. The following is an update on the status of several analyses in progress:

1. The applications for emission reduction credits from the cessation of agricultural burning for El Rio Farms (00748), Perry Farms (00747), and SJV Enterprises (00749) were deemed incomplete on August 10, 2001. Please be advised that if a response is not received within 60 days of that date (October 9, 2001), the applications will be withdrawn.

2. The application for emission reduction credits from the replacement of agricultural pumps for Takemori Farms was deemed incomplete on March 19, 2001. Although information associated with the incomplete letter was submitted in the form of an update/agricultural pump protocol, a response addressing each of the incomplete bullets must be submitted.

3. To date, the District has not received contracts for the following emission reduction credit transfers: Blue Diamond Growers (for nitrogen oxides and particulate matter), Perry Farms, SJV Enterprises (Sacramento County), Scheidel, Payne, and Ridge Cut Farms. In addition, the District has not received any information on emission reduction credits from Feather River Air Quality Management District for SJV Enterprises.

4. To date, the District has not received an analysis or preliminary decision from Feather River Air Quality Management District for proposed paving Sankey Road in Sutter County.

5. To date, the District has not received documentation on the distances between the source of emission reduction credits being proposed for offsets and the power plant. These distances are used to determine the distance ratio applied to the certified credits. If emission reduction credits contained in a certificate have multiple distance ratios, documentation must be included to justify using any distance ratio less than the farthest distance for that certificate. If discount acreage has been requested in the certificate, the farthest distance must be used as the farthest parcels may be burned for disease control.

6. To date, the District has not received a formal written request for interpollutant trading. This request must be accompanied by analyses supporting the proposed ratio. Attached please find a list of methodologies that have been conducted in the past in other areas to determine appropriate ratios. The list includes analyses for both ozone precursors and PM10 precursors. FPL will be required to perform each of the analyses for the pollutant trade being requested. If an analysis cannot be conducted, FPL must substantiate the reasons.

If you have any questions concerning this letter, feel free to contact me at 916-874-4847.

Sincerely,

Chelsea Ayala
Associate Air Quality Planner Analyst

enclosure: Interpollutant trade methodologies

cc: Brigette Tollstrup
Brian Krebs

IPT_METH
sjb 9/4/01

IPT methodologies

Methods used to derive interpollutant trading ratios in California
(See <R9_IPT_trades.123> for table of trades)

Method general types:
- Photochemical airshed model
- Box model
- Isopleths derived from models
- Ratios of ambient concentrations to emissions
- Precursor-limited formation - from hand-waiving, model, ratios of ambient pollutants, or semi-empirical models

Methods not used for any trades so far:
- Trajectory analysis (may have been used for High Desert Power Project)
- Reactive plume models (Lagrangian)
- Process analysis, other advanced sensitivity methods

Need criteria for evaluating pros & cons -- e.g., in evaluating approaches, consider:
- ease of use, expense
- ability to estimate desired metric
- effects at peak and non-peak locations, variation in time and space, multiple episodes
- ambiguity, robustness, reliability, uncertainty, scientific credibility
- ability to assess specific source and offset locations
- chemical nonlinearity, including over time with cumulative trades
- consistency with SIP modeling
- ability to assess other effects, e.g. toxics & environmental justice

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1. EKMA diagram

DESCRIPTION
Generate EKMA-type diagram of domain peak O3 derived from across-the-board NOx and VOC reductions, using simulations from SIP attainment demonstration modeling application of UAM IV in predicted attainment year. Determine slope at plan's predicted (VOC, NOx) attainment point on the 12 pphm O3 isopleth. Reciprocal of slope gives IPT ratio as estimate of amount of VOC decrease needed to offset NOx increase, maintaining O3 constant. E.g., for Sacramento area, when model was not available but an isopleth plot was, found VOC for NOx trading ratios between 2:1 and 4.8:1.

DOCUMENTED IN

letter from David Howekamp to Dan Speer (SDCAPCD) and other California districts, "Untitled" (clarification of EPA position on IPT), 4/13/95 (<Ipvn1.wp5>)

USED FOR
Campbell Soup and Protcer & Gamble cogeneration projects, and Sacramento Ethanol and Power Project (SEPCO) - SMAQMD 1994; High Desert Power Project - MDAQMD 1998-2001

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2. Photochemical model sensitivity

DESCRIPTION
Using simulations from SIP attainment demonstration modeling application of UAM IV in predicted attainment year, determine O3 reduction due to a few small across-the-board changes in VOC and NOx reductions (variant: vary point source emissions only). Ratio of ozone sensitivities gives IPT ratio.

DOCUMENTED IN
notes from Scott Bohning, "Interpollutant Trading of Offsets (VOC for NOX)" (version 3), 5/19/98 (<Ipvn3.wp5>) E.g. for Sacramento area found about 1:1.

USED FOR
Kiefer Landfill - SMAQMD 1998 (modeling by CARB)

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3. VOC-limited area

DESCRIPTION
Photochemical model simulation response to reductions, ambient VOC/NOx ratios, ambient NOx/NOy ratios, etc. can be used to establish a location's contribution to ozone formation as VOC-limited. If so, use 1:1 ratio.

E.g., High Desert Power Project used Integrated Empirical Rate (IER) model of Johnson et al., and Smog Production (SP) model of Blanchard et al., which uses ambient NOx/NOy ratios to estimate the ratio of an air parcel's ozone to its maximum potential ozone formation (extent of reaction); a ratio under 0.6 indicates VOC limitation. This project also relied on UAM-modeled VOC/NOx ratios.

DOCUMENTED IN
letter from Sara J. Head (ENSR) to Alan DeSalvio (MDAQMD), "Estimating

Interpollutant Trade-off Ratio for the High Desert Power Project", 12/11/98;

letter from Howard Balentine (ENSR) and Sara J. Head (ENSR) to Matt Haber, "Re
High Desert Power Project Interpollutant Tradeoff Analysis", 3/9/99 (<Haber9Mar letter.doc>);

also letter from Gary Rubenstein (Sierra Research) to Anthony Mendes (SJVUAPCD), "Evaluation of Interpollutant Offset Ratios, Pacific Gas and Electric Company McDonald Island Compressor Station", 6/5/98;

see also on IER/SP: Blanchard, C.L., F.W. Lurmann, P.M. Roth, H.E. Jeffries, and M. Korc, "The use of ambient data to corroborate analyses of ozone control strategies", Atmospheric Environment 33:369-381, 1999.

USED FOR
many projects (?) - BAAQMD, High Desert Power Project - MDAQMD 1999, Blythe Energy - MDAQMD 2000

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4. Limiting pollutant in PM formation

DESCRIPTION
Photochemical model simulation response to reductions, local area emissions, and ambient pollutant ratios can be used to establish limiting pollutant in secondary PM formation. E.g., South Coast AQMD has argued that its western portion has an excess of ammonia (sulfate limited) to support a 1:1 SO2 for PM10 ratio, with 2:1 used for conservatism. South Coast has done other modeling as well, to derive ratios for subregions for various pollutant combinations, but we have not seen this.

DOCUMENTED IN
memo from Bong Kim (SCAQMD) to Henry Hogo (SCAQMD) "Interprecursor Offset Ratio", 4/26/00

USED FOR
Mountainview Project - SCAQMD 2001

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5. Ratio of monitor to upwind area emissions

DESCRIPTION
Assuming upwind area is responsible for O3 exceedances in downwind

area, use ratios of upwind area's VOC and NOx emissions to downwind area's O3 to estimate O3 sensitivities, and ratio of these for IPT ratio. (Found 2:1 ratio for San Diego downwind of South Coast.)

DOCUMENTED IN
letter from Richard J. Smith (SDCAPCD) to John Kennedy, "Interpollutant and Interbasin Offsets", 6/11/97

USED FOR
Otay Mesa - SDAPCD 1997 & 2000

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6. Ratio of monitor to emissions

DESCRIPTION
Combine 1) primary PM10 concentration per directly emitted PM10, and 2) ammonium sulfate PM10 concentration per emitted SO2, to get an SO2 for PM10 ratio.

DOCUMENTED IN
letter from Gary Rubenstein (Sierra Research) to Anthony Mendes (SJVUAPCD), "Evaluation of Interpollutant Offset Ratios, Pacific Gas and Electric Company McDonald Island Compressor Station", 6/5/98; e-mail from Gary Rubenstein (Sierra Research) to Steven Barhite, "FW Revised SOx/PM10 Analysis - Episode Days" (includes 2/28/00 e-mail from Gary Rubenstein (Sierra Research) to Bong-Mann Kim (SCAQMD) (<interpollutant_ratio.xls>), 12/14/00; letter from David Deckman (Sierra Research) to David Warner (SJVUAPCD), "Del Monte Foods - Hanford Plant", 6/11/01

USED FOR
McDonald Island Compressor Station - SJVUAPCD 1998, Mountainview Project - SCAQMD 2001, Del Monte - SJVUAPCD 2001

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7. Photochemical box model

DESCRIPTION
Use photochemical box modeling to determine ultimate (equilibrium) PM yield of NOx emissions.

E.g., Stockwell et al. used box model with RACM mechanism to model conversion of NOx to nitric acid For yield of ammonium nitrate from nitric acid, used constant 80% derived from SCAPE-2 equilibrium model. (Valid for temperature under 292 K, relative humidity over 70%, little sulfate available, abundant ammonia -- OK for San Joaquin Valley in

winter. Since production not ammonia-limited, could decouple ammonium nitrate particulate chemistry from the gas phase chemistry.) Studied sensitivity by varying temperature, humidity, VOC, NOX, deposition rate (most sensitive). Average among scenarios of ammonium nitrate per NOx emissions was 0.57 (mass), giving IPT ratio of 1.8. Value was stable after about 36 hours of simulation. Predictions were not far from ambient ratios.

Also e.g., SCAQMD used a box model with UAM-Areo-LT aerosol chemical mechanism for three zones of their airshed, coastal, inland valley, and desert, deriving different ratios for each. Ratios for VOC for PM trades have been high (over 100), SOx for PM around 2:1, and NOx for PM not defined (inconsistent results?).

Also e.g., BAAQMD.

DOCUMENTED IN
Stockwell, W.R., J. G. Watson, N.F. Robinson, W. Steiner and W.W. Sylte, The Ammonium Nitrate Particle Equivalent of NOx Emissions for Continental Wintertime Conditions, Atmos. Environ., 34, 4711-4717, 2000.);

technical report by William W. Sylte (URS-Greiner/Woodward Clyde and Desert Research Institute) for La Paloma Generating Company LLC, "A Proposed Method of Establishing an Interpollutant Offset Ratio for Trading Nitrogen Oxides for PM10 in Western Kern County", 3/22/99;

See also draft technical report by Betty K. Pun and Christian Seigneur (Atmospheric and Environmental Research Inc.) for Eugene Shelar (PG&E), "Sensitivity of PM Nitrate Formation to Precursor Emissions in the California Joaquin Valley", 4/9/99 (for area near Fresno, not used for La Paloma; used IMS95 model; found NOx decrease leads to PM increase -- via O3 increase)

USED FOR
La Paloma Generating Project, Pastoria Energy Facility, Elk Hills Power, Midway Sunset Cogeneration Company, Warnerville Substation - SJVUAPCD 1999-2000

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

FILE COPY

Norm Covell
AIR POLLUTION CONTROL OFFICER

October 5, 2001

Mr. Whitman F. Manley
Remy, Thomas and Moose, LLP
455 Capitol Mall, Suite 210
Sacramento, CA 95814

Re: FPL Energy – Rio Linda/Elverta Power Project DOC Extension

Dear Mr. Manley:

The District is in receipt of your letter dated October 3, 2001, asking for an extension of the 180-day processing time for a Preliminary Determination of Compliance. This extension has been deemed necessary since the District does not have enough information at this time to issue a PDOC. Your extension request does not propose to establish a fixed term since it is unclear at this time when the information needed by the District will be made available.

Your letter implies that only the revised modeling analysis is needed to complete our evaluation. However, as a matter of clarification, the District has requested and is about to request a number of other items in addition to the revised modeling analysis that will be required to be submitted in order for the District to finish our evaluation. Some of these items are outlined in an October 4, 2001 letter from Chelsey Ayala to yourself and a second letter will be sent with in a week of some additional items that were just recently found. Lastly, once the District receives all of the aforementioned items, the District will determine an appropriate length of time that will be necessary to complete our evaluation and issue the PDOC.

Therefore, the District is hereby granting the requested extension which will extend the date of issuance of the PDOC beyond the 180 days. The granting of this extension is contingent on the District determining an appropriate term for the extension once all of the aforementioned requests have been submitted.

If you have any questions, please call me at 916-874-4856.

Sincerely,

Brian F. Krebs

BRIAN F. KREBS
Program Coordinator

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SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Norm Covell
AIR POLLUTION CONTROL OFFICER

October 23, 2001

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Remy, Thomas and Moose, LLP
455 Capitol Mall
Suite 210
Sacramento, CA 95814
Attn: Whitman F. Manley

Subject: STATUS OF EMISSION REDUCTION CREDIT PROCESSING – FPL ENERGY

Dear Mr. Manley:

This letter is regarding the emission reduction credits in support of FPL Energy's Rio Linda/Elverta power plant. The following is the most recent update on the status of several analyses in progress:

1. The application for emission reduction credits from the cessation of agricultural burning for El Rio Farms (00748) was deemed incomplete on August 10, 2001. We are in receipt of the estimated fees for the application as well as information from Remy, Thomas and Moose in response to the incomplete letter. The response letter was received October 15, 2001, and the application will be reviewed to determine completeness within 30 days (by November 14, 2001).
2. The application for emission reduction credits from the cessation of agricultural burning for SJV Enterprises (00749) was deemed incomplete on August 10, 2001. We are in receipt of the estimated fees for the application as well as a request to extend the response timeframe to November 9, 2001. If the additional information is not received by this date, the application will be withdrawn. Following receipt of the information in response to the incomplete letter, the application will be reviewed to determine completeness within 30 days of that receipt.
3. The application for emission reduction credits from the cessation of agricultural burning for Perry Farms (00747) was deemed incomplete on August 10, 2001. We are in receipt of the estimated fees for the application as well as information from both Perry Farms and Remy, Thomas and Moose in response to the incomplete letter. The last response letter was received on October 15, 2001, and the application will be reviewed to determine completeness within 30 days (by November 14, 2001).

4. The application for emission reduction credits from the replacement of agricultural pumps for Takemori Farms was deemed incomplete on March 19, 2001. Although information associated with the incomplete letter was submitted in the form of an updated agricultural pump protocol, a response addressing each of the incomplete bullets must be submitted. If additional information is not received within 30 days of the date of this letter (November 22, 2001), the application will be withdrawn.
5. To date, the District has not received contracts for the following emission reduction credit transfers: SJV Enterprises (Sacramento County), Scheidel, and Payne. In addition, the District has not received an evaluation, preliminary decision, and/or final decision from Remy, Thomas and Moose for emission reduction credits for SJV Enterprises in Sutter County.
6. To date, the District has not received from Remy, Thomas and Moose an analysis and preliminary decision for the proposed paving of Sankey Road in Sutter County.
7. To date, the District has not received a formal written request for interpollutant trading. This request must be accompanied by analyses supporting the proposed ratio. Please refer to the list of methodologies that have been conducted in the past in other areas to determine appropriate ratios. This list was sent to you on October 4, 2001. The list includes analyses for both ozone precursors and PM10 precursors. FPL will be required to perform each of the analyses for the pollutant trade being requested. If an analysis cannot be conducted, FPL must substantiate the reasons. In addition, the request for interpollutant trading must be accompanied by justification for the need for interpollutant trading including measures taking to obtain emission reduction credits in support of the project.

If you have any questions concerning this letter, feel free to contact me at 916-874-4847.

Sincerely,

Chelsea Ayala

Chelsea Ayala
Associate Air Quality Planner Analyst

cc: Mr. Mike Tollstrup
Chief, Program Assessment Branch
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Brigette Tollstrup (SMAQMD)
Brian Krebs (SMAQMD)

APPENDIX B

Comments on URS Modeling Work

The use of EKMA photochemical modeling is one approach to deriving an interpollutant trading ratio. However, the modeling conducted by URS was for only one day (August 1, 2000), using some limited actual ambient data (from Airport Road monitoring station?), and applying some gross assumptions for other inputs (mixing heights, temperature, surface and aloft introduced ambient pollutants, and emissions). However, the EKMA modeling is not consistent with the SMAQMD's SIP attainment demonstration for 2005 using the Urban Airshed Model (UAM), a regional photochemical 3-D grid model.

The hourly mixing heights assumed were 480 meters to 650 meters, based on some historical average for Sacramento from a 1976 reference. There should be better data available since August 1, 2000 was a CCOS field data collection day.

The hourly temperature assumed was 303 degrees K (about 86 degrees F). Again, there should be better data available.

It is not clear as to how the surface and aloft ambient NOx and ozone concentrations were derived. There is also an inconsistency between Table 1 and the text in Attachment A concerning the value for the initial ambient NMOC concentration (0.39 ppmC vs. 0.46 ppmC). There is no justification given as to why the initial NMOC concentrations were assumed to be different than the surface and aloft introduced ambient NMOC concentrations (0.0767 ppmC).

The methodology assumed that 9% of the power plant emissions would participate in photochemical reactions in the cell, based on the average wind speed in the area. This needs to be explained in more detail. What happens to the other 91% of the emissions? Also, it is not clear as to why the emissions in the second hour for NMOC and NOx are lower than the first hour, if the second hour supposedly combines the two power plants.

The EKMA modeling results using ozone concentration isopleths are graphed in conjunction with initial ambient NOx and NMOC concentrations. It is then assumed that the change in concentration is directly proportional to inventory emissions. However, the initial concentrations could be due partly to previous day emissions and photochemistry and not just fresh emissions. The ratio of initial ambient VOC to NOx concentrations (0.46 ppmC/0.065 ppm or about 7) does not mimic the ratio of VOC to NOx inventory emissions (99.6 tpd/112 tpd or about 4 after the VOC is converted to ppmC). Also, the emissions used in the trading ratio equation (99.6 tpd of VOC and 112 tpd of NOx) are not referenced.

In addition, since this EKMA analysis was for only one specific day, other high ozone days should be simulated for a broader mix of meteorological and pollutant scenarios.

Here are some additional comments/information on the URS draft EKMA modeling analysis for the proposed Rio Linda Elverta/FPL power plant:

1. Countywide daily emissions were averaged for every hour of the day and for every square kilometer in the county to derive the background emissions for the EKMA modeling. However, emissions are mainly emitted during the day and in the urbanized areas. A better emissions estimate should consider these factors and would probably quadruple the background emissions that were input into the model.

2. The day selected for the EKMA modeling run was Aug. 1, 2000. This was a PAMS day, and the NMOC concentration for the 6 a.m. to 9 a.m. canister sample at the Airport Road station was 284 ppbC.

3. The maximum temperature measured at the Airport Road site on Aug. 1, 2000 was 38 degrees C (about 100 degrees F) at 1600 hours.

4. Relative humidity was assumed to be a constant 5% in the EKMA modeling run for Aug. 1, 2000. The actual measured hourly relative humidity should be available.

5. The maximum hourly ozone on Aug. 1, 2000 was 129 ppb at the Sloughhouse site and was 120 ppb at the North Highlands site.

6. The EKMA trading ratio analysis equates the ozone impact from a 6.5% change in VOC to be equivalent to an 18% change in NOx, using the initial ambient precursor concentrations as a basis. The percentage change in ambient precursor concentrations were then multiplied by the daily emissions inventory to derive the VOC/NOx ratio of 0.32. However, a more direct and realistic approach may be to adjust the emissions for different EKMA scenario runs to assess the affect on ozone, similar to the UAM methodology.